

1
SEQUENCE LISTING

<110> CHUGAI SEIYAKU KABUSHIKI KAISHA

<120> Anti-PCI neutralizing antibodies

<130> 14875-147US1

<150> PCT/JP2004/000429

<151> 2004-01-20

<150> JP 2003-011529

<151> 2003-01-20

<160> 60

<170> PatentIn version 3.1

<210> 1

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially synthesized sequence

<400> 1

acgaattcca ccatgcagct cttcctc

27

<210> 2

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially synthesized sequence

<400> 2

ctggatccctc aggggcgggtt cactttgc

28

<210> 3

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially synthesized sequence

<400> 3

ttggatccgg ggttcacttt gccaaag

26

<210> 4

<211> 1237

<212> DNA

<213> Artificial

<220>

<223> Artificially synthesized sequence encoding human PCI

<220>

<221> CDS

<222> (11)..(1228)

<400> 4

gaattccacc atg cag ctc ttc ctc ttg tgc ctg gtg ctt ctc agc	49
Met Gln Leu Phe Leu Leu Leu Cys Leu Val Leu Leu Ser	
1 5 10	

cct cag ggg gcc tcc ctt cac cgc cac cac ccc cgg gag atg aag aag	97
Pro Gln Gly Ala Ser Leu His Arg His His Pro Arg Glu Met Lys Lys	
15 20 25	

aga gtc gag gac ctc cat gta ggt gcc acg gtg gcc ccc agc agc aga	145
Arg Val Glu Asp Leu His Val Gly Ala Thr Val Ala Pro Ser Ser Arg	
30 35 40 45	

agg gac ttt acc ttc gac ctc tac agg gtc ttg gct tcc gct gcc ccc	193
Arg Asp Phe Thr Phe Asp Leu Tyr Arg Val Leu Ala Ser Ala Ala Pro	
50 55 60	

agc cag aat atc ttc ttc tcc cct gtg agc atc tcc atg agc ctg gcc	241
Ser Gln Asn Ile Phe Phe Ser Pro Val Ser Ile Ser Met Ser Leu Ala	
65 70 75	

atg ctc tcc ctg ggg gct ggg tcc agc aca aag atg cag atc ctg gag	289
Met Leu Ser Leu Gly Ala Gly Ser Ser Thr Lys Met Gln Ile Leu Glu	
80 85 90	

ggc ctg ggc ctc aac ctc cag aaa agc tca gag gag gag ctg cac aga	337
Gly Leu Gly Leu Asn Leu Gln Lys Ser Ser Glu Glu Glu Leu His Arg	
95 100 105	

ggc ttt cag cag ctc ctt cag gaa ctc aac cag ccc aga gat ggc ttc	385
Gly Phe Gln Gln Leu Leu Gln Glu Leu Asn Gln Pro Arg Asp Gly Phe	
110 115 120 125	

cag ctg agc ctc ggc aat gcc ctt ttc acc gac ctg gtg gta gac ctg	433
Gln Leu Ser Leu Gly Asn Ala Leu Phe Thr Asp Leu Val Val Asp Leu	
130 135 140	

cag gac acc ttc gta agt gcc atg aag acg ctg tac ctg gca gac act	481
Gln Asp Thr Phe Val Ser Ala Met Lys Thr Leu Tyr Leu Ala Asp Thr	
145 150 155	

ttc ccc acc aac ttt agg gac tct gca ggg gcc atg aag cag atc aat	529
Phe Pro Thr Asn Phe Arg Asp Ser Ala Gly Ala Met Lys Gln Ile Asn	
160 165 170	

gat tat gtg gca aag caa acg aag ggc aag att gtg gac ttg ctt aag	577
Asp Tyr Val Ala Lys Gln Thr Lys Gly Lys Ile Val Asp Leu Leu Lys	
175 180 185	

aac ctc gat agc aat gcg gtc gtg atc atg gtg aat tac atc ttc ttt	625
Asn Leu Asp Ser Asn Ala Val Val Ile Met Val Asn Tyr Ile Phe Phe	

190	195	200	205	
aaa gct aag tgg gag aca agc ttc aac cac aaa ggc acc caa gag caa				673
Lys Ala Lys Trp Glu Thr Ser Phe Asn His Lys Gly Thr Gln Glu Gln				
210	215	220		
gac ttc tac gtg acc tcg gag act gtg gtg cggtta ccc atg atg agc				721
Asp Phe Tyr Val Thr Ser Glu Thr Val Val Arg Val Pro Met Met Ser				
225	230	235		
cgccg gag tat cac tac ctc ctg gac cggtta ccc tcc tgc agg				769
Arg Glu Asp Gln Tyr His Tyr Leu Leu Asp Arg Asn Leu Ser Cys Arg				
240	245	250		
gtg gtg ggg gtc ccc tac caa ggc aat gcc acg gct ttg ttc att ctc				817
Val Val Gly Val Pro Tyr Gln Gly Asn Ala Thr Ala Leu Phe Ile Leu				
255	260	265		
ccc agt gag gga aag atg cag cag gtg gag aat gga ctg agt gag aaa				865
Pro Ser Glu Gly Lys Met Gln Gln Val Glu Asn Gly Leu Ser Glu Lys				
270	275	280	285	
acg ctg agg aag tgg ctt aag atg ttc aaa aag agg cag ctc gag ctt				913
Thr Leu Arg Lys Trp Leu Lys Met Phe Lys Arg Gln Leu Glu Leu				
290	295	300		
tac ctt ccc aaa ttc tcc att gag ggc tcc tat cag ctg gag aaa gtc				961
Tyr Leu Pro Lys Phe Ser Ile Glu Gly Ser Tyr Gln Leu Glu Lys Val				
305	310	315		
ctc ccc agt ctg ggg atc agt aac gtc ttc acc tcc cat gct gat ctg				1009
Leu Pro Ser Leu Gly Ile Ser Asn Val Phe Thr Ser His Ala Asp Leu				
320	325	330		
tcc ggc atc agc aac cac tca aat atc cag gtg tct gag atg gtg cac				1057
Ser Gly Ile Ser Asn His Ser Asn Ile Gln Val Ser Glu Met Val His				
335	340	345		
aaa gct gtg gtg gag gtg gac gag tcg gga acc aga gca gcg gca gcc				1105
Lys Ala Val Val Glu Val Asp Glu Ser Gly Thr Arg Ala Ala Ala Ala				
350	355	360	365	
acg ggg aca ata ttc act ttc agg tcg gcc cgc ctg aac tct cag agg				1153
Thr Gly Thr Ile Phe Thr Phe Arg Ser Ala Arg Leu Asn Ser Gln Arg				
370	375	380		
cta gtg ttc aac agg ccc ttt ctg atg ttc att gtg gat aac aac atc				1201
Leu Val Phe Asn Arg Pro Phe Leu Met Phe Ile Val Asp Asn Asn Ile				
385	390	395		
ctc ttc ctt ggc aaa gtg aac cgc ccc tgaggatcc				1237
Leu Phe Leu Gly Lys Val Asn Arg Pro				
400	405			

<210> 5
<211> 406

<212> PRT
 <213> Artificial

<220>
 <223> Human PCI

<220>
 <221> sig_peptide
 <222> (1)..(19)

<400> 5
 Met Gln Leu Phe Leu Leu Leu Cys Leu Val Leu Leu Ser Pro Gln Gly
 1 5 10 15
 Ala Ser Leu His Arg His His Pro Arg Glu Met Lys Lys Arg Val Glu
 20 25 30
 Asp Leu His Val Gly Ala Thr Val Ala Pro Ser Ser Arg Arg Asp Phe
 35 40 45
 Thr Phe Asp Leu Tyr Arg Val Leu Ala Ser Ala Ala Pro Ser Gln Asn
 50 55 60
 Ile Phe Phe Ser Pro Val Ser Ile Ser Met Ser Leu Ala Met Leu Ser
 65 70 75 80
 Leu Gly Ala Gly Ser Ser Thr Lys Met Gln Ile Leu Glu Gly Leu Gly
 85 90 95
 Leu Asn Leu Gln Lys Ser Ser Glu Glu Leu His Arg Gly Phe Gln
 100 105 110
 Gln Leu Leu Gln Glu Leu Asn Gln Pro Arg Asp Gly Phe Gln Leu Ser
 115 120 125
 Leu Gly Asn Ala Leu Phe Thr Asp Leu Val Val Asp Leu Gln Asp Thr
 130 135 140
 Phe Val Ser Ala Met Lys Thr Leu Tyr Leu Ala Asp Thr Phe Pro Thr
 145 150 155 160
 Asn Phe Arg Asp Ser Ala Gly Ala Met Lys Gln Ile Asn Asp Tyr Val
 165 170 175
 Ala Lys Gln Thr Lys Gly Lys Ile Val Asp Leu Leu Lys Asn Leu Asp
 180 185 190
 Ser Asn Ala Val Val Ile Met Val Asn Tyr Ile Phe Phe Lys Ala Lys
 195 200 205
 Trp Glu Thr Ser Phe Asn His Lys Gly Thr Gln Glu Gln Asp Phe Tyr
 210 215 220
 Val Thr Ser Glu Thr Val Val Arg Val Pro Met Met Ser Arg Glu Asp
 225 230 235 240
 Gln Tyr His Tyr Leu Leu Asp Arg Asn Leu Ser Cys Arg Val Val Gly

245	250	255
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Val Pro Tyr Gln Gly Asn Ala Thr Ala Leu Phe Ile Leu Pro Ser Glu	260	265	270
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Gly Lys Met Gln Gln Val Glu Asn Gly Leu Ser Glu Lys Thr Leu Arg	275	280	285
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Lys Trp Leu Lys Met Phe Lys Lys Arg Gln Leu Glu Leu Tyr Leu Pro	290	295	300
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Lys Phe Ser Ile Glu Gly Ser Tyr Gln Leu Glu Lys Val Leu Pro Ser	305	310	315	320
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Leu Gly Ile Ser Asn Val Phe Thr Ser His Ala Asp Leu Ser Gly Ile	325	330	335
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Ser Asn His Ser Asn Ile Gln Val Ser Glu Met Val His Lys Ala Val	340	345	350
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Val Glu Val Asp Glu Ser Gly Thr Arg Ala Ala Ala Ala Thr Gly Thr	355	360	365
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Ile Phe Thr Phe Arg Ser Ala Arg Leu Asn Ser Gln Arg Leu Val Phe	370	375	380
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Asn Arg Pro Phe Leu Met Phe Ile Val Asp Asn Asn Ile Leu Phe Leu	385	390	395	400
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Gly Lys Val Asn Arg Pro	405
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<210> 6

<211> 1261

<212> DNA

<213> Artificial

<220>

<223> Artificially synthesized DNA encoding human PCI with Flag-tag

<220>

<221> CDS

<222> (11)..(1258)

<400> 6

gaattccacc atg cag ctc ttc ctc ctc ttg tgc ctg gtg ctt ctc agc	49	
Met Gln Leu Phe Leu Leu Cys Leu Val Leu Leu Ser		
1	5	10

cct cag ggg gcc tcc ctt cac cgc cac cac ccc cggtt gag atg aag aag	97	
Pro Gln Gly Ala Ser Leu His Arg His His Pro Arg Glu Met Lys Lys		
15	20	25

aga gtc gag gac ctc cat gta ggt gcc acg gtg gcc ccc agc agc aga	145		
Arg Val Glu Asp Leu His Val Gly Ala Thr Val Ala Pro Ser Ser Arg			
30	35	40	45

agg gac ttt acc ttc gac ctc tac agg gtc ttg gct tcc gct gcc ccc Arg Asp Phe Thr Phe Asp Leu Tyr Arg Val Leu Ala Ser Ala Ala Pro	50	55	60	193
agc cag aat atc ttc ttc tcc cct gtg agc atc tcc atg agc ctg gcc Ser Gln Asn Ile Phe Phe Ser Pro Val Ser Ile Ser Met Ser Leu Ala	65	70	75	241
atg ctc tcc ctg ggg gct ggg tcc agc aca aag atg cag atc ctg gag Met Leu Ser Leu Gly Ala Gly Ser Ser Thr Lys Met Gln Ile Leu Glu	80	85	90	289
ggc ctg ggc ctc aac ctc cag aaa agc tca gag gag gag ctg cac aga Gly Leu Gly Leu Asn Leu Gln Lys Ser Ser Glu Glu Glu Leu His Arg	95	100	105	337
ggc ttt cag cag ctc ctt cag gaa ctc aac cag ccc aga gat ggc ttc Gly Phe Gln Gln Leu Leu Gln Glu Leu Asn Gln Pro Arg Asp Gly Phe	110	115	120	385
cag ctg agc ctc ggc aat gcc ctt ttc acc gac ctg gtg gta gac ctg Gln Leu Ser Leu Gly Asn Ala Leu Phe Thr Asp Leu Val Val Asp Leu	130	135	140	433
cag gac acc ttc gta agt gcc atg aag acg ctg tac ctg gca gac act Gln Asp Thr Phe Val Ser Ala Met Lys Thr Leu Tyr Leu Ala Asp Thr	145	150	155	481
ttc ccc acc aac ttt agg gac tct gca ggg gcc atg aag cag atc aat Phe Pro Thr Asn Phe Arg Asp Ser Ala Gly Ala Met Lys Gln Ile Asn	160	165	170	529
gat tat gtg gca aag caa acg aag ggc aag att gtg gac ttg ctt aag Asp Tyr Val Ala Lys Gln Thr Lys Gly Lys Ile Val Asp Leu Leu Lys	175	180	185	577
aac ctc gat agc aat gcg gtc gtg atc atg gtg aat tac atc ttc ttt Asn Leu Asp Ser Asn Ala Val Val Ile Met Val Asn Tyr Ile Phe Phe	190	195	200	625
aaa gct aag tgg gag aca agc ttc aac cac aaa ggc acc caa gag caa Lys Ala Lys Trp Glu Thr Ser Phe Asn His Lys Gly Thr Gln Glu Gln	210	215	220	673
gac ttc tac gtg acc tcg gag act gtg gtg cgg gta ccc atg atg agc Asp Phe Tyr Val Thr Ser Glu Thr Val Val Arg Val Pro Met Met Ser	225	230	235	721
cgc gag gat cag tat cac tac ctc ctg gac cgg aac ctc tcc tgc agg Arg Glu Asp Gln Tyr His Tyr Leu Leu Asp Arg Asn Leu Ser Cys Arg	240	245	250	769
gtg gtg ggg gtc ccc tac caa ggc aat gcc acg gct ttg ttc att ctc Val Val Gly Val Pro Tyr Gln Gly Asn Ala Thr Ala Leu Phe Ile Leu	255	260	265	817

ccc agt gag gga aag atg cag cag gtg gag aat gga ctg agt gag aaa		865	
Pro Ser Glu Gly Lys Met Gln Gln Val Glu Asn Gly Leu Ser Glu Lys			
270	275	280	285
acg ctg agg aag tgg ctt aag atg ttc aaa aag agg cag ctc gag ctt		913	
Thr Leu Arg Lys Trp Leu Lys Met Phe Lys Lys Arg Gln Leu Glu Leu			
290	295	300	
tac ctt ccc aaa ttc tcc att gag ggc tcc tat cag ctg gag aaa gtc		961	
Tyr Leu Pro Lys Phe Ser Ile Glu Gly Ser Tyr Gln Leu Glu Lys Val			
305	310	315	
ctc ccc agt ctg ggg atc agt aac gtc ttc acc tcc cat gct gat ctg		1009	
Leu Pro Ser Leu Gly Ile Ser Asn Val Phe Thr Ser His Ala Asp Leu			
320	325	330	
tcc ggc atc agc aac cac tca aat atc cag gtg tct gag atg gtg cac		1057	
Ser Gly Ile Ser Asn His Ser Asn Ile Gln Val Ser Glu Met Val His			
335	340	345	
aaa gct gtg gtg gag gtg gac gag tcg gga acc aga gca gcg gca gcc		1105	
Lys Ala Val Val Glu Val Asp Glu Ser Gly Thr Arg Ala Ala Ala Ala			
350	355	360	365
acg ggg aca ata ttc act ttc agg tcg gcc cgc ctg aac tct cag agg		1153	
Thr Gly Thr Ile Phe Thr Phe Arg Ser Ala Arg Leu Asn Ser Gln Arg			
370	375	380	
cta gtg ttc aac agg ccc ttt ctg atg ttc att gtg gat aac aac atc		1201	
Leu Val Phe Asn Arg Pro Phe Leu Met Phe Ile Val Asp Asn Asn Ile			
385	390	395	
ctc ttc ctt ggc aaa gtg aac cgc ccc gga tcc gac tac aag gac gac		1249	
Leu Phe Leu Gly Lys Val Asn Arg Pro Gly Ser Asp Tyr Lys Asp Asp			
400	405	410	
gat gac aag tga		1261	
Asp Asp Lys			
415			

<210> 7
<211> 416
<212> PRT
<213> Artificial

<220>
<223> Human PCI with Flag-tag

<220>
<221> sig_peptide
<222> (1)..(19)

<400> 7
Met Gln Leu Phe Leu Leu Cys Leu Val Leu Leu Ser Pro Gln Gly
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Ala Ser Leu His Arg His His Pro Arg Glu Met Lys Lys Arg Val Glu
 20 25 30

Asp Leu His Val Gly Ala Thr Val Ala Pro Ser Ser Arg Arg Asp Phe
 35 40 45

Thr Phe Asp Leu Tyr Arg Val Leu Ala Ser Ala Ala Pro Ser Gln Asn
 50 55 60

Ile Phe Phe Ser Pro Val Ser Ile Ser Met Ser Leu Ala Met Leu Ser
 65 70 75 80

Leu Gly Ala Gly Ser Ser Thr Lys Met Gln Ile Leu Glu Gly Leu Gly
 85 90 95

Leu Asn Leu Gln Lys Ser Ser Glu Glu Glu Leu His Arg Gly Phe Gln
 100 105 110

Gln Leu Leu Gln Glu Leu Asn Gln Pro Arg Asp Gly Phe Gln Leu Ser
 115 120 125

Leu Gly Asn Ala Leu Phe Thr Asp Leu Val Val Asp Leu Gln Asp Thr
 130 135 140

Phe Val Ser Ala Met Lys Thr Leu Tyr Leu Ala Asp Thr Phe Pro Thr
 145 150 155 160

Asn Phe Arg Asp Ser Ala Gly Ala Met Lys Gln Ile Asn Asp Tyr Val
 165 170 175

Ala Lys Gln Thr Lys Gly Lys Ile Val Asp Leu Leu Lys Asn Leu Asp
 180 185 190

Ser Asn Ala Val Val Ile Met Val Asn Tyr Ile Phe Phe Lys Ala Lys
 195 200 205

Trp Glu Thr Ser Phe Asn His Lys Gly Thr Gln Glu Gln Asp Phe Tyr
 210 215 220

Val Thr Ser Glu Thr Val Val Arg Val Pro Met Met Ser Arg Glu Asp
 225 230 235 240

Gln Tyr His Tyr Leu Leu Asp Arg Asn Leu Ser Cys Arg Val Val Gly
 245 250 255

Val Pro Tyr Gln Gly Asn Ala Thr Ala Leu Phe Ile Leu Pro Ser Glu
 260 265 270

Gly Lys Met Gln Gln Val Glu Asn Gly Leu Ser Glu Lys Thr Leu Arg
 275 280 285

Lys Trp Leu Lys Met Phe Lys Lys Arg Gln Leu Glu Leu Tyr Leu Pro
 290 295 300

Lys Phe Ser Ile Glu Gly Ser Tyr Gln Leu Glu Lys Val Leu Pro Ser
 305 310 315 320

Leu Gly Ile Ser Asn Val Phe Thr Ser His Ala Asp Leu Ser Gly Ile
 325 330 335

 Ser Asn His Ser Asn Ile Gln Val Ser Glu Met Val His Lys Ala Val
 340 345 350

 Val Glu Val Asp Glu Ser Gly Thr Arg Ala Ala Ala Ala Thr Gly Thr
 355 360 365

 Ile Phe Thr Phe Arg Ser Ala Arg Leu Asn Ser Gln Arg Leu Val Phe
 370 375 380

 Asn Arg Pro Phe Leu Met Phe Ile Val Asp Asn Asn Ile Leu Phe Leu
 385 390 395 400

 Gly Lys Val Asn Arg Pro Gly Ser Asp Tyr Lys Asp Asp Asp Asp Lys
 405 410 415

<210> 8
 <211> 119
 <212> PRT
 <213> Mus musculus

<400> 8
 Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala
 1 5 10 15

 Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asp Ile Lys Asp Thr
 20 25 30

 Phe Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
 35 40 45

 Gly Arg Ile Asp Tyr Val Asn Gly Asn Thr Lys Tyr Asp Pro Lys Phe
 50 55 60

 Gln Gly Lys Ala Thr Ile Thr Gly Asp Thr Ser Ser Asn Thr Ala Tyr
 65 70 75 80

 Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

 Ala Arg Gly Gly Tyr Asp Val Arg Glu Phe Ala Tyr Trp Gly Gln Gly
 100 105 110

Thr Leu Val Thr Val Ser Ala
 115

<210> 9
 <211> 119
 <212> PRT
 <213> Mus musculus

<400> 9
 Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala

1	5	10	15
Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asp Ile Lys Asp Thr			
20	25	30	
Phe Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile			
35	40	45	
Gly Arg Ile Asp Tyr Val Asn Gly Asn Thr Lys Tyr Asp Pro Lys Phe			
50	55	60	
Gln Gly Lys Ala Thr Ile Thr Gly Asp Thr Ser Ser Asn Thr Ala Tyr			
65	70	75	80
Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys			
85	90	95	
Ala Arg Gly Gly Tyr Asp Val Arg Glu Phe Ala Tyr Trp Gly Gln Gly			
100	105	110	
Thr Leu Val Thr Val Ser Ala			
115			

<210> 10
<211> 119
<212> PRT
<213> Mus musculus

<400> 10			
Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala			
1	5	10	15
Ser Val Lys Leu Ser Cys Thr Ala Ser Gly Phe Asp Ile Arg Asp Thr			
20	25	30	
Phe Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile			
35	40	45	
Gly Arg Ile Asp Leu Val Asn Val Asn Thr Lys Tyr Asp Pro Asn Phe			
50	55	60	
Gln Asp Arg Ala Thr Ile Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr			
65	70	75	80
Leu Gln Leu Thr Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys			
85	90	95	
Ala Arg Gly Gly Tyr Asp Val Arg Glu Phe Ala Tyr Trp Gly Gln Gly			
100	105	110	
Thr Leu Val Thr Val Ser Ala			
115			

<210> 11
<211> 119

<212> PRT
<213> Mus musculus

<400> 11
Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ala
1 5 10 15
Leu Val Lys Leu Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys Asp Tyr
20 25 30
Tyr Ile His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45
Gly Arg Ile Asp Leu Glu Lys Gly Asn Ile Ile Tyr Asp Pro Lys Phe
50 55 60
Gln Gly Lys Asp Asn Ile Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
65 70 75 80
Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Arg Gly Gly Tyr Asp Val Pro Ser Phe Ala Tyr Trp Gly Gln Gly
100 105 110
Thr Leu Val Thr Val Ser Ala
115

<210> 12
<211> 119
<212> PRT
<213> Mus musculus

<400> 12
Glu Val Lys Leu Leu Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Arg Tyr
20 25 30
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu
50 55 60
Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Lys Thr Leu Tyr
65 70 75 80
Leu Gln Met Asn Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys
85 90 95
Ala Arg Phe Phe Tyr Tyr Gly Thr Pro Asp Tyr Trp Gly Gln Gly Thr
100 105 110
Thr Leu Thr Val Ser Ser Ala

115

<210> 13
 <211> 119
 <212> PRT
 <213> Mus musculus

<400> 13
 Glu Val Lys Leu Leu Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Lys Phe Ser Cys Glu Ala Ser Gly Phe Asp Phe Ser Arg Tyr
 20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
 35 40 45

Gly Glu Ile Asn Pro Asp Ser Ser Thr Ile Thr Tyr Thr Ser Ser Leu
 50 55 60

Lys Asp Arg Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr
 65 70 75 80

Leu Gln Met Ser Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95

Ala Arg Leu Phe Tyr Tyr Gly Thr Pro Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Thr Leu Thr Val Ser Ser Ala
 115

<210> 14
 <211> 120
 <212> PRT
 <213> Mus musculus

<400> 14
 Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala
 1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Phe Gly Tyr Thr Phe Thr Thr Tyr
 20 25 30

Pro Ile Glu Trp Met Lys Gln Asn His Gly Lys Ser Leu Glu Trp Ile
 35 40 45

Gly Lys Phe His Pro Asp Asn Asp Asp Thr Asn Tyr Asn Glu Lys Phe
 50 55 60

Lys Gly Lys Ala Lys Leu Thr Val Glu Lys Ser Ser Ser Thr Val Tyr
 65 70 75 80

Leu Glu Leu Ser Arg Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Gly His Asp Tyr Asp Tyr Gly Met Asp Tyr Trp Gly Gln Gly
 100 105 110

Thr Ser Val Thr Val Ser Ser Ala
 115 120

<210> 15
 <211> 106
 <212> PRT
 <213> Mus musculus

<400> 15
 Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1 5 10 15

Glu Lys Val Thr Ile Thr Cys Ser Ala Thr Ser Ser Leu Ile Tyr Met
 20 25 30

His Trp Phe Gln Gln Lys Pro Gly Ser Ser Pro Glu Leu Trp Ile Tyr
 35 40 45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
 50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
 65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
 85 90 95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105

<210> 16
 <211> 106
 <212> PRT
 <213> Mus musculus

<400> 16
 Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1 5 10 15

Glu Lys Val Thr Ile Thr Cys Ser Ala Thr Ser Ser Leu Ile Tyr Met
 20 25 30

His Trp Phe Gln Gln Lys Pro Gly Ser Ser Pro Glu Leu Trp Ile Tyr
 35 40 45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
 50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
 65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
 85 90 95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 17
<211> 106
<212> PRT
<213> *Mus musculus*

<400> 17
Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1 5 10 15

Glu Lys Val Thr Ile Thr Cys Ser Ala Thr Ser Ser Leu Ile Tyr Met
20 25 30

His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
35 40 45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
 85 90 95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 18
<211> 106
<212> PRT
<213> Mus musculus

<400> 18
Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1 5 10 15

Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30

His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
35 40 45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr

85	90	95
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Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105

<210> 19
 <211> 108
 <212> PRT
 <213> Mus musculus

<400> 19
 Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ile Val Ala
 20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Glu Leu Leu Ile
 35 40 45

Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
 65 70 75 80

Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Ser Ser Pro Pro
 85 90 95

Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys
 100 105

<210> 20
 <211> 108
 <212> PRT
 <213> Mus musculus

<400> 20
 Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1 5 10 15

Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ile Lys Ala
 20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
 35 40 45

Tyr Ser Thr Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
 65 70 75 80

Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Ser Ser Pro Pro
 85 90 95

Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105

<210> 21
 <211> 111
 <212> PRT
 <213> Mus musculus

<400> 21
 Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1 5 10 15

Gln Arg Ala Thr Ile Ser Cys Lys Ala Ser Gln Ser Val Asp Tyr Asp
 20 25 30

Gly Asp Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
 35 40 45

Lys Leu Leu Ile Tyr Gly Ala Ser Asn Leu Glu Ser Gly Thr Pro Ala
 50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Asp Ile His
 65 70 75 80

Pro Val Glu Glu Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Ser Asn
 85 90 95

Glu Asp Pro Pro Thr Phe Gly Gly Thr Lys Leu Glu Ile Thr
 100 105 110

<210> 22
 <211> 5
 <212> PRT
 <213> Mus musculus

<400> 22
 Asp Thr Phe Met His
 1 5

<210> 23
 <211> 5
 <212> PRT
 <213> Mus musculus

<400> 23
 Asp Tyr Tyr Ile His
 1 5

<210> 24
 <211> 5
 <212> PRT
 <213> Mus musculus

<400> 24
Arg Tyr Trp Met Ser
1 5

<210> 25
<211> 5
<212> PRT
<213> Mus musculus

<400> 25
Thr Tyr Pro Ile Glu
1 5

<210> 26
<211> 17
<212> PRT
<213> Mus musculus

<400> 26
Arg Ile Asp Tyr Val Asn Gly Asn Thr Lys Tyr Asp Pro Lys Phe Gln
1 5 10 15

Gly

<210> 27
<211> 17
<212> PRT
<213> Mus musculus

<400> 27
Arg Ile Asp Leu Val Asn Val Asn Thr Lys Tyr Asp Pro Asn Phe Gln
1 5 10 15

Asp

<210> 28
<211> 17
<212> PRT
<213> Mus musculus

<400> 28
Arg Ile Asp Leu Glu Lys Gly Asn Ile Ile Tyr Asp Pro Lys Phe Gln
1 5 10 15

Gly

<210> 29
<211> 17

<212> PRT
<213> Mus musculus

<400> 29
Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Pro Ser Leu Lys
1 5 10 15

Asp

<210> 30
<211> 17
<212> PRT
<213> Mus musculus

<400> 30
Glu Ile Asn Pro Asp Ser Ser Thr Ile Thr Tyr Thr Ser Ser Leu Lys
1 5 10 15

Asp

<210> 31
<211> 17
<212> PRT
<213> Mus musculus

<400> 31
Lys Phe His Pro Asp Asn Asp Asp Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 32
<211> 10
<212> PRT
<213> Mus musculus

<400> 32
Gly Gly Tyr Asp Val Arg Glu Phe Ala Tyr
1 5 10

<210> 33
<211> 10
<212> PRT
<213> Mus musculus

<400> 33
Gly Gly Tyr Asp Val Pro Ser Phe Ala Tyr
1 5 10

<210> 34
<211> 9
<212> PRT
<213> Mus musculus

<400> 34
Phe Phe Tyr Tyr Gly Thr Pro Asp Tyr
1 5

<210> 35
<211> 9
<212> PRT
<213> Mus musculus

<400> 35
Leu Phe Tyr Tyr Gly Thr Pro Asp Tyr
1 5

<210> 36
<211> 10
<212> PRT
<213> Mus musculus

<400> 36
Gly His Asp Tyr Asp Tyr Gly Met Asp Tyr
1 5 10

<210> 37
<211> 10
<212> PRT
<213> Mus musculus

<400> 37
Ser Ala Thr Ser Ser Leu Ile Tyr Met His
1 5 10

<210> 38
<211> 10
<212> PRT
<213> Mus musculus

<400> 38
Ser Ala Ser Ser Ser Val Ser Tyr Met His
1 5 10

<210> 39
<211> 11
<212> PRT
<213> Mus musculus

<400> 39
Lys Ala Ser Gln Asp Val Ile Val Ala Val Ala

1 5 10

<210> 40
<211> 11
<212> PRT
<213> Mus musculus

<400> 40
Lys Ala Ser Gln Asp Val Ile Lys Ala Val Ala
1 5 10

<210> 41
<211> 15
<212> PRT
<213> Mus musculus

<400> 41
Lys Ala Ser Gln Ser Val Asp Tyr Asp Gly Asp Ser Tyr Leu Asn
1 5 10 15

<210> 42
<211> 11
<212> PRT
<213> Mus musculus

<400> 42
Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala
1 5 10

<210> 43
<211> 11
<212> PRT
<213> Mus musculus

<400> 43
Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp
1 5 10

<210> 44
<211> 11
<212> PRT
<213> Mus musculus

<400> 44
Ser Thr Ser Tyr Arg Tyr Thr Gly Val Pro Asp
1 5 10

<210> 45
<211> 11
<212> PRT
<213> Mus musculus

<400> 45
Gly Ala Ser Asn Leu Glu Ser Gly Thr Pro Ala
1 5 10

<210> 46
<211> 7
<212> PRT
<213> Mus musculus

<400> 46
Arg Ser Ser Tyr Pro Phe Thr
1 5

<210> 47
<211> 8
<212> PRT
<213> Mus musculus

<400> 47
His Tyr Ser Ser Pro Pro Trp Thr
1 5

<210> 48
<211> 7
<212> PRT
<213> Mus musculus

<400> 48
Ser Asn Glu Asp Pro Pro Thr
1 5

<210> 49
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR1

<220>
<221> misc_feature
<222> (2)..(2)
<223> "Xaa" in position 2 represents "Thr" or "Tyr"

<220>
<221> misc_feature
<222> (3)..(3)
<223> "Xaa" in position 3 represents "Phe" or "Tyr"

<220>
<221> misc_feature
<222> (4)..(4)

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<223> "Xaa" in position 4 represents "Met" or "Ile"
<400> 49
Asp Xaa Xaa Xaa His
    1          5

<210> 50
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR2

<220>
<221> misc_feature
<222> (4)..(4)
<223> "Xaa" in position 4 represents "Tyr" or "Leu"

<220>
<221> misc_feature
<222> (5)..(5)
<223> "Xaa" in position 5 represents "Val" or "Glu"

<220>
<221> misc_feature
<222> (6)..(6)
<223> "Xaa" in position 6 represents "Asn" or "Lys"

<220>
<221> misc_feature
<222> (7)..(7)
<223> "Xaa" in position 7 represents "Gly" or "Val"

<220>
<221> misc_feature
<222> (9)..(9)
<223> "Xaa" in position 9 represents "Thr" or "Ile"

<220>
<221> misc_feature
<222> (10)..(10)
<223> "Xaa" in position 10 represents "Lys" or "Ile"

<220>
<221> misc_feature
<222> (14)..(14)
<223> "Xaa" in position 14 represents "Lys" or "Asn"

<220>
<221> misc_feature
<222> (17)..(17)
<223> "Xaa" in position 17 represents "Gly" or "Asp"

<400> 50
Arg Ile Asp Xaa Xaa Xaa Xaa Asn Xaa Xaa Tyr Asp Pro Xaa Phe Gln
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1

5

10

15

Xaa

<210> 51
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR3

<220>
<221> misc_feature
<222> (6)..(6)
<223> "Xaa" in position 6 represents "Arg" or "Pro"

<220>
<221> misc_feature
<222> (7)..(7)
<223> "Xaa" in position 7 represents "Glu" or "Ser"

<400> 51
Gly Gly Tyr Asp Val Xaa Xaa Phe Ala Tyr
1 5 10

<210> 52
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR1

<400> 52
Arg Tyr Trp Met Ser
1 5

<210> 53
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR2

<220>
<221> misc_feature
<222> (10)..(10)
<223> "Xaa" in position 10 represents "Asn" or "Thr"

<220>
<221> misc_feature

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<222> (13)..(13)
<223> "Xaa" in position 13 represents "Pro" or "Ser"

<400> 53
Glu Ile Asn Pro Asp Ser Ser Thr Ile Xaa Tyr Thr Xaa Ser Leu Lys
 1           5           10          15

Asp

<210> 54
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy chain CDR3

<220>
<221> misc_feature
<222> (1)..(1)
<223> "Xaa" in position 1 represents "Phe" or "Leu"

<400> 54
Xaa Phe Tyr Tyr Gly Thr Pro Asp Tyr
 1           5

<210> 55
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain CDR1

<220>
<221> misc_feature
<222> (3)..(3)
<223> "Xaa" in position 3 represents "Thr" or "Ser"

<220>
<221> misc_feature
<222> (6)..(6)
<223> "Xaa" in position 6 represents "Leu" or "Val"

<220>
<221> misc_feature
<222> (7)..(7)
<223> "Xaa" in position 7 represents "Ile" or "Ser"

<400> 55
Ser Ala Xaa Ser Ser Xaa Xaa Tyr Met His
 1           5           10

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<210> 56
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain CDR2

<400> 56
Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala
      1           5                   10
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<210> 57
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3

<400> 57
Arg Ser Ser Tyr Pro Phe Thr
      1           5
```

```
<210> 58
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain CDR1

<220>
<221> misc_feature
<222> (8)..(8)
<223> "Xaa" in position 8 represents "Val" or "Lys"

<400> 58
Lys Ala Ser Gln Asp Val Ile Xaa Ala Val Ala
      1           5           10
```

```
<210> 59
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain CDR2

<220>
<221> misc_feature
<222> (2)..(2)
<223> "Xaa" in position 2 represents "Ala" or "Thr"
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<400> 59
Ser Xaa Ser Tyr Arg Tyr Thr Gly Val Pro Asp
1 5 10

<210> 60
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Light chain CDR3

<400> 60
His Tyr Ser Ser Pro Pro Trp Thr
1 5